Interactive comment on “Characterization of iodine particles with Volatilization-Humidification Tandem Differential Mobility Analyser (VH-TDMA), Raman and SEM techniques” by Z. D. Ristovski et al.

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The paper describes analytical results obtained from iodine oxide particle samples produced from a variety of sources under a variety of experimental conditions. Of particular atmospheric interest is the conclusion of I$_2$O$_4$ composition for particles generated from the photo-oxidation of CH$_2$I$_2$ in a reaction chamber in agreement with the findings of an earlier study of the same system (Jimenez et al., 2003). I would like to raise the following points;
1. I draw the authors’ attention to the recent paper (Saunders and Plane, 2005), in which we discuss the quantitative EDX analysis of iodine oxide particles produced from the photo-oxidation of $I_2$ with $O_3$ in the laboratory at room temperature, atmospheric pressure and low RH (dry). Highly consistent atomic ratios from a number of individual particle aggregates were found which indicated that the composition was $I_2O_5$. We also remarked upon the contradiction of this result with that indirectly inferred in the Jimenez et al. study (2003). It would prove an interesting comparison with our particle images if the authors included a medium - high resolution SEM image of the sample collected from their reaction chamber experiments, particularly as none have been published from the $CH_2I_2/O_3$ system to date.

2. Figure 7, which shows the EDX spectra of photo-chemically produced aerosol compared with an $I_2O_5$ standard, would at first sight seem to show that the aerosol was composed of $I_2O_5$ - there being very little difference in the relative $I$ and $O$ peak heights and areas. Although no count scale is given in the figure, surely there would be a more marked difference in the peak heights / areas if $I_2O_4$ was indeed the particle composition? Presumably, the spectra were normalised in some way for comparison but no mention is made of this.

3. Also in Figure 7, the peak at approx. 3.5 keV labelled as I(L) has no basis with regard to the iodine reference data (CRC Handbook, 2004-2005) whereas the L peak evident at approx. 4.85 keV has not been labelled. The I(M) label adjacent to the O(K) peak does not apply to any distinguishable feature in the spectrum.

4. The Raman spectra shown in Figures 5 and 6 while of interest, do not give any corroborative evidence that $I_2O_4$ is the composition of the photo-chemically generated aerosol. As such, the $I_2O_4$ labelling on these figures is somewhat misleading, particularly as these figures precede the EDX spectra from which the composition was inferred.

References:

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